DIAGNOSTIC SIGNIFICANCE OF ELEVATED LUNG/MYOCARDIAL THALLIUM-201 RATIO IN CHRONIC CONGESTIVE HEART FAILURE

Eulogio Martinez, Steven F. Horowitz, Helio Castello, Mario Castiglioni, Antonio Carvalho, Dircau Almeida, Roberto R Roberti, Manuel Saragoca, Antonio Barbieri. Beth Israel Medical Center, New York, N.Y., and Escola Paulista de Medicina, Sao Paulo, Brazil.

Increased lung (L) Tl-201 occurs with exercise in pts with severe CAD due to increased pulmonary capillary wedge pressure (PCW), but its utility as a marker of elevated PCW in pts with chronic CHF at rest is unknown. A noninvasive estimation of PCW in pts with CHF would be a useful clinical tool. We determined the significance of elevated L Tl-201 in CHF pts by comparison with simultaneously obtained PCW in 16 pts with CHF and cardiomyopathy, all NYHA class IV. Resting L and myocardial (M) counts were expressed as a ratio and correlated with PCW up to 3 hr post Tl-201 injection.

Time(min)	L/M X̄±SD	PCW(mmHg) X̄±SD	r(Spearman)	p<
10	.83±.30	24±09	.40	NS
30	.64±.19	23±09	.56	.05
60	.59±.17	22±09	.65	.01
120	.54±.13	25±11	.50	NS
180	.57±.12	25±10	.39	NS
240	.55±.11	25±08	.46	NS

There was a rapid fall in L/M from 10 to 60 minutes, (.83±.30 to .59±.17 p<.001) with no change in PCW.
Conclusion: In patients with cardiomyopathy rest L/M correlates with PCW at 30 and 60 minutes. This ratio may, therefore, be useful as a clinical tool for the noninvasive estimation of PCW. In addition, Tl-201 washout is rapid despite persistance of PCW elevation, indicating clearance does not imply resolution of CHF.

COMPARATIVE SIDE EFFECT PROFILE AND SAFETY OF INTRAVENOUS ADENOSINE VERSUS DIPYRIDAMOLE RADIONUCLIDE IMAGING

Gregg Teigen, Barbara Kong, Leslee Shaw, Karen Stocke, Robert D. Wiens, Dennis G. Caralis, Bernard R. Chaitman, St. Louis University School of Medicine, St. Louis, MO

Intravenous adenosine (AD) (dose: 140 µg/kg/min -6 min infusion) and intravenous dipyridamole (DP) (dose: 0.14 mg/kg/min for 4 minutes) are potent coronary vasodilators associated with cardiac (CP) and non-cardiac (NC) side effects. We studied 142 pts who underwent thallium imaging after AD infusion and compared the side effect profile to 142 DP pts matched for age, weight, and gender. NC side effects were significantly more frequent after AD (68% vs. 32%; p=0.0001), in particular, flushing (p=0.0001), nausea (p=0.03), and lightheadedness (p=0.05), but of shorter duration. Chest pain occurred with similar frequency in both groups. Transient advanced atrioventricular block was noted in 11 (16%) pts after AD but not after DP. There were no pts who had a myocardial infarction or death. The average percent change in systolic blood pressure was -3.2±19% and -9±12%, respectively (p=0.003). The frequency of side effects increased significantly with increasing body weight after DP(p=0.001), but not afterAD.

By weight (lb):	<140	141-160	161-180	>180
AD (% side effects)	51	71	54	63
DP (% side effects)	19	29	33	47

Thus, (1) IV AD and DP are relatively safe in the dosage employed in this study; (2) side effects are more frequent after adenosine; (3) however, the side effects appear to be of shorter duration than after DP.

THALLIUM SCINTIGRAPHY ACCURATELY DETECTS CORONARY ARTERY DISEASE IN ASYMPTOMATIC HYPERTENSIVE PATIENTS

William Chin, Brian O'Kelly, Julio Tubau, Jadwiga Szlachcic, Susan Ammon, Judith Wisneski, Barry Massie, VAMC and University of California, San Francisco, CA

Previous studies have raised concern about the accuracy of exercise (EX) ECG and thallium scintigraphy (TL) for diagnosing CAD in hypertensive patients (PTS) because of the high incidence of false positive tests, particularly in subjects with LVH. However, these studies have usually been retrospective and have often not included coronary arteriography. Therefore, we performed coronary arteriography in 25 consecutive consenting PTS undergoing screening for asymptomatic CAD who had positive EX-ECG and/or TL studies. All were men (mean age 63±8, range 45 to 77 years) with mild to moderate hypertension (156±15/94±10 five days off therapy). The EX-ECG and TL were read by 2 observers who were blinded to other test results but were aware of the PTS asymptomatic status and therefore interpreted the studies conservatively. 21/25 PTS had EX-ECG ischemia (> 1mm horizontal or downsloping ST-depression compared to baseline); 2 had negative EX-ECG but achieved < 80% of predicted heart rate; the remaining 2 had dipyridamole TL because of non-cardiac exercise limitations. 15/25 PTS had reversible TL defects; 1 had a fixed defect and 9 had no defects. 14/15 PTS with reversible defects had significant CAD (> 50% stenosis by diameter). Of these, 5 had left main or 3VD, 5 had 2 VD, and 4 had 1VD. The PT with a fixed defect had dilated cardiomyopathy without CAD. All 9 with no TL defects had a positive EX-ECG but no coronary lesions > 50%. Of the 10 PTS with echo LVH, 6 with reversible defects had CAD, whereas 4 with normal scintigrams and positive EX-ECG did not. We conclude that TL accurately diagnoses CAD in asymptomatic hypertensive PTS, even when mild to moderate echo LVH is present, but EX-ECG is associated with frequent false positive results in this population.

Monday, March 4, 1991
Poster Displayed: 2:00PM–5:00PM
Author Present: 3:00PM–4:00PM
Hall F, West Concourse
Factors Influencing Exercise Induced Ischemia

SIGNIFICANCE OF PLASMA BETA-ENDORPHIN IN SILENT MYOCARDIAL ISCHEMIA IN PATIENTS WITH STABLE ANGINA IN COMPARISON WITH PLASMA BRADYKININ AT EXERCISE

Hiroyuki Hikita, Akira Kurita, Bonpei Takase, Akimi Uehata Toshihiko Nishioka, Toshiharu Maruyama, Hirokazu Nagayoshi Kyouichi Mizuno, Haruo Nakamura
National Defense Medical College, Saitama, Japan

To investigate whether pain related substances, plasma beta-endorphin (END) and bradykinin (BK), are related with silent (S) or painful (P) myocardial ischemia (MI) in patients(pts) with stable angina (SA), we measured plasma END and BK levels by RIA in 92 SA pts (60±10 yrs) at rest (R) and after treadmill exercise (EX) testing. Also measured was the pain threshold (PT) by skin electrical stimulation at R and after EX. All pts underwent Holter (H)ECG for 24 hr on the same day. On the results of EX, pts were divided into 3 groups; Group 1(G1), 34 pts with both chest pain and an EX induced ST↓(≥1.5 mm, 60 msec J); Group 2 (G2), 34 pts without chest pain but an EX induced ST↓; and Group 3(G3), 24 pts under antianginal agents with no chest pain nor an EX induced ST↓. The groups then were compared with 25 age and background matched normal controls (NL).

	G1	G2	G3	NL
BK(pg/ml, R/EX)	18/19	11/13	19/15	8/12
END(pg/ml, R/Δ%)	8/18	7/51*	7/19	6/20
PT(mA, R/Δ%)	0.8/23#	1.5*/48	1.3/52	1.4/52
EX time(sec)	359	427	410	6526

Δ% ; percent changes from R to EX, #;p<.05 vs.G2,G3,NL
*;p<.05 vs.G1 & ;p<.05 vs.G1,G2,G3

Further, SMI was observed in 27/92 pts by H-ECG, while PMI in 6/92 pts. The END level in SMI pts became higher after EX than in PMI pts (9 vs. 4 pg/ml, p<.05). Conclusion: EX induced ischemia elevated the plasma END level in G2, whereas plasma BK level did not show significant changes. This may indicate that SMI involves through an increase in the general and anginal PT by EX. Thus END has more significant role in the modulation of pain than BK in SA pts.